Fitting Spiral Development to more effective OT&E

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Introduction

- The Concept
- The Challenge
- Types of Development
- Spiral Development Characteristics
- OT&E Objectives
- A Fitting
- Navy Readiness Example
- Summary

The Concept

- **Evolutionary Acquisition (EA) “strategies” rely on a Spiral Development (SD) “process” for an earlier delivery to the warfighter**
- **A Trade-off….**
  - **May be less than full capability (…and less than fully tested), but…**
  - **Affordable, risk-reduced, agile, and earlier delivery of a product**
- **Best Means of getting advanced technologies to the user**

The Challenge

- **Fitting Spiral Development into More Effective OT&E**

- **DOD programs are increasingly going to spiral development to:**
  - **Get early buy-in from users on enhanced capabilities.**
- **Spiral development presents a different challenge to:**
  - **Software Quality Assurance (SQA)**
  - **Operational Testing and Evaluation.**

Development Processes

- Traditional - One extended process
  - Full system capability, but after a long time
- Evolutionary - Multiple sequential extended processes
  - Full system capability per evolution – new technology as it comes
- Incremental - Multiple sequential processes
  - Full system capability achieved by increments
- Spiral - Multiple maturing cycles
  - Gradually maturing capability – early use of new technology

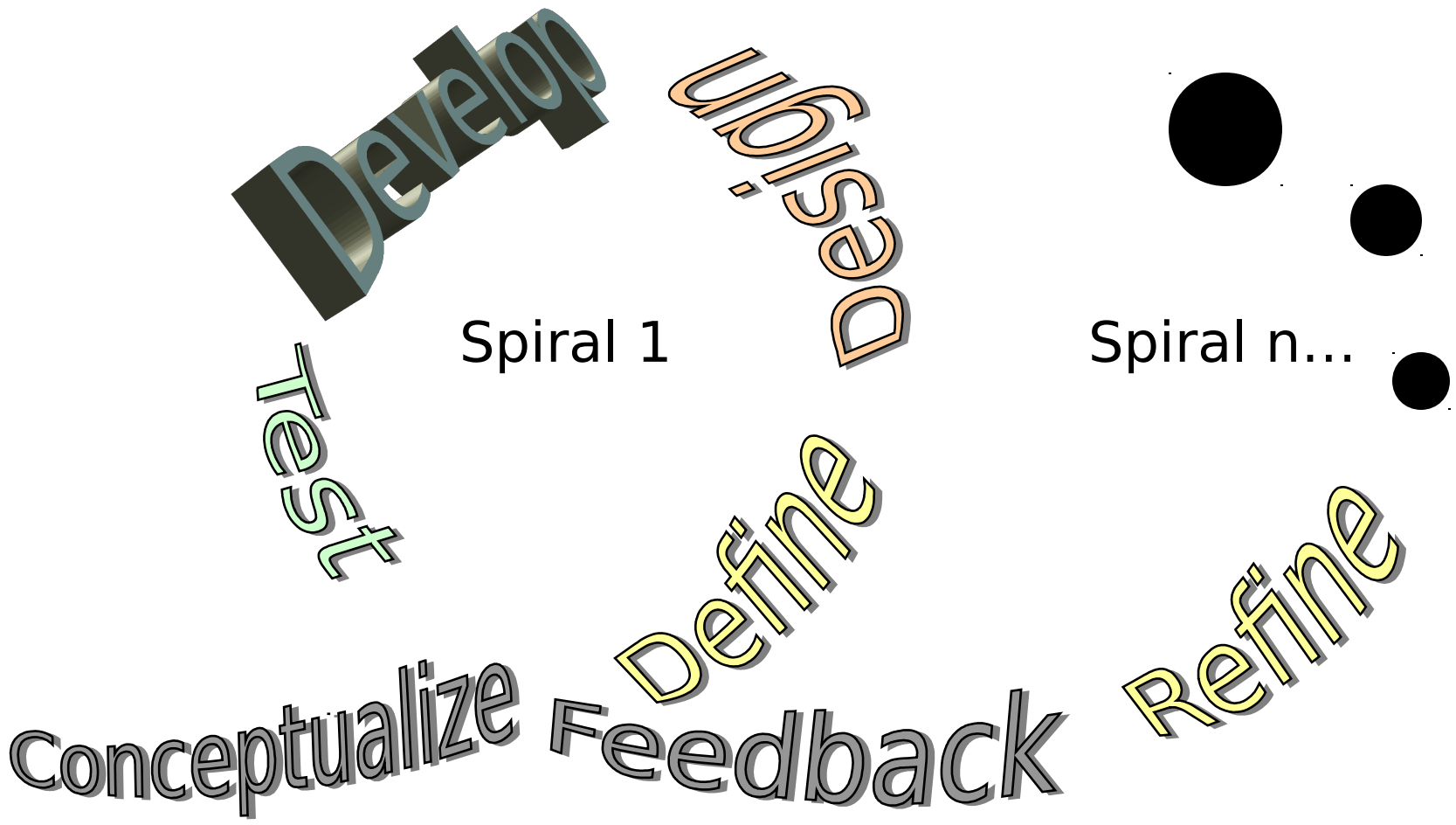
Spiral Development (SD)

- Characteristics
  - Risk-managed process
  - Stakeholder Involvement
  - Cyclic Approach
  - Incrementally grow definition & Implementation
  - Milestone Anchored

Operational Test & Evaluation

- Objectives - Characteristics
  - Operational Effectiveness
  - Operational Suitability
    - Reliability
    - **Mean Time Between Operational Mission Failures (MTBOMF)**
    - Maintainability
    - **Mean Corrective Maintenance Time for Operational Mission Failures (MCMTOMF)**
    - Availability
    - **Operational Availability (Ao) = UPTIME / UPTIME+DOWNTIME**
  - Survivability

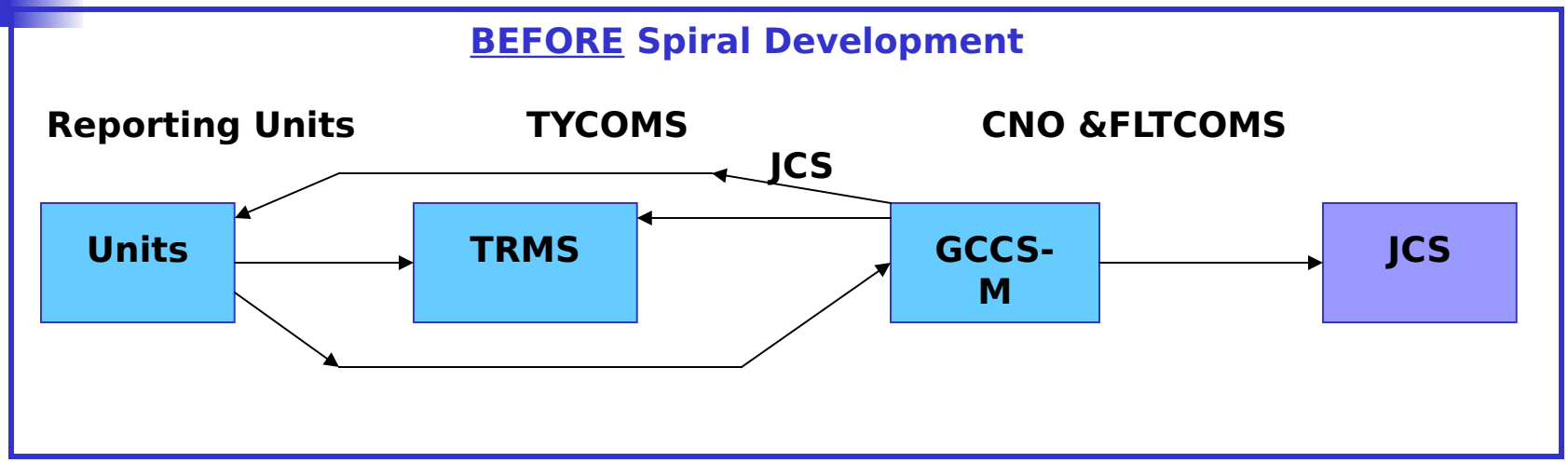
Spiral development

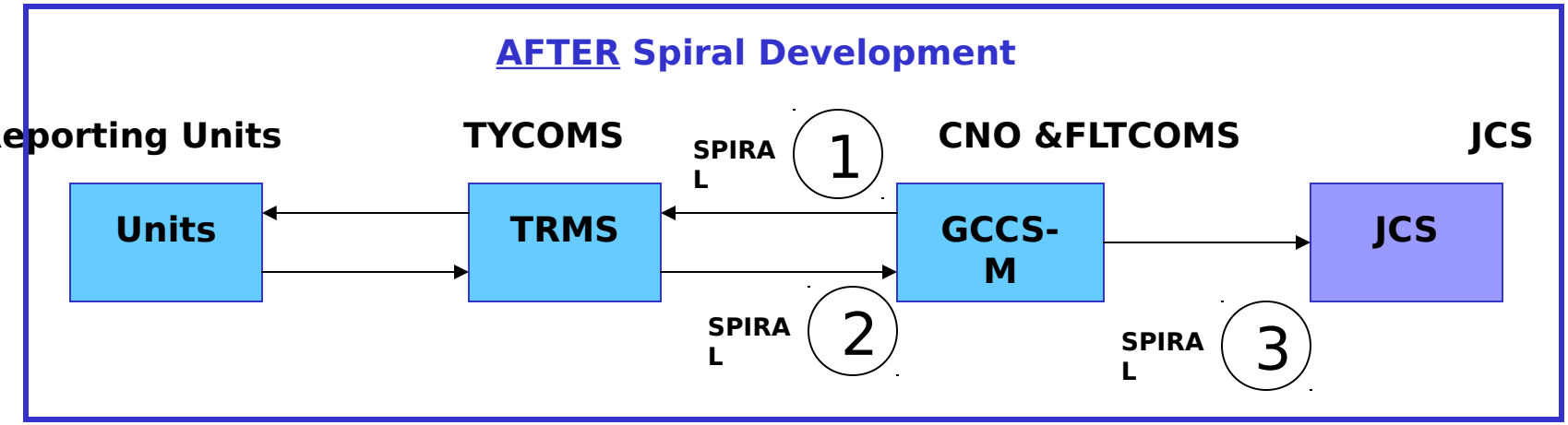


Spiral Development - OT&E Fit

- Conceptualize / Feedback Phases
  - Planning is critical – Feedback is vital
- Define /Refine Phases
  - Requirements traceability – Risk Management
- Design Phases
- Development Phases
- Test (Development Test / Operational Test - DT/OT)
  - Simulation is one solution

Navy Readiness Example





Summary

- Plan, Plan, Plan
- Requirements traceability
- Risk Management
- Simulation